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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.		Total Pages	
First Named Inventor or Application Identifier			
Eric Cheung et al.			
Express Mail Label No.	EL580482064		

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: **Assistant Commissioner for Patents, Box Patent Application, Washington, D.C. 20231**

1. ☒ Fee Transmittal Form *(submit an original, and a duplicate for fee processing)*
2. ☒ Specification [Total Pages 20] (preferred arrangement set forth below)
   - Descriptive title of invention
   - Cross References to Related Applications
   - Statement Regarding Fed sponsored R&D
   - Reference to Microfiche Appendix
   - Background of the Invention
   - Brief Summary of the Invention
   - Brief Description of the Drawings(if filed)
   - Detailed Description
   - Claim(s)
   - Abstract of the Disclosure
3. ☒ Drawing(s)(35 USC 113) [Total Sheets 5]
4. Oath or Declaration [Total Pages 6]
   a. ☒ Newly executed (original or copy)
   b. ☐ Copy from a prior application(37 CFR 1 63(d)) *(for continuation/divisional with Box 15 completed)* ***[Note Box 15 below]***
      i. ☐ DELETION OF INVENTOR(S) Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 163(d)(2) and 1.33(b)
5. ☐ Microfiche Computer Program *(Appendix)*
6. ☐ Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all necessary)*
   a. ☐ Computer Readable Copy
   b. ☐ Paper Copy(identical to computer copy)
   c. ☐ Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

7. ☒ Assignment Papers(cover sheet & document(s))
8. ☐ 37 CFR 3.73(b)Statement ☐ Power of Attorney
9. ☐ English Translation Document *(if applicable)*
10. ☐ Information Disclosure ☐ Copies of IDS Statement(IDS)/PTO-1449 Citations
11. ☐ Preliminary Amendment
12. ☒ Return Receipt Postcard (MPEP 503) *(Should be specifically itemized)*
13. ☐ Certified Copy of Priority Document(s) *(if foreign priority is claimed)*
14. ☐ Other :

15. **If a CONTINUING APPLICATION**, *check appropriate box and supply the requisite information below and in a preliminary amendment:*
☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior Application No:
Prior application information: Examiner: *Group/Art Unit:*

For CONTINUATION or DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 4b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

16. CORRESPONDENCE ADDRESS

☐ *Customer Number or Bar Code Label* (Insert Customer No. or Attach bar code label here) *or* ☒ *Correspondence address below*

NAME	Samuel H. Dworetsky				
ADDRESS	AT&T CORP. P.O. Box 4110				
CITY	Middletown	STATE	New Jersey	ZIP CODE	07748-4110
COUNTRY	United States of America			FAX	732-368-6932

17. SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

NAME	Michele L. Conover	Reg. #	34962
TELEPHONE	908-221-5773		
SIGNATURE	Michele L Conover	DATE	10/24/00

"Express Mail" Mailing Label Number EL580482064 Date of Deposit

I hereby certify that this Application is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington D.C. , 20231

Shawn MGee
(Printed Name of Person Mailing Paper)

(Signature of Person Mailing Paper)

FEE TRANSMITTAL

Patent Fees are subject to annual revision

TOTAL AMOUNT OF PAYMENT	$876

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Eric Cheung et al.
Examiner Name	
Group/Art Unit	
Attorney Docket No.	2000-0092

METHOD OF PAYMENT (check one)

1. The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:

Deposit Account Number: 01-2745

Deposit Account Name: AT&T CORP.

* ☒ Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17 ☐ Charge the Issue Fee Set in 37 CFR 1.18 at the Mailing Date of the Notice of Allowance

FEE CALCULATION

1. FILING FEE

Large Fee Code	Entity Fee($)	Fee Description	Fee Paid
101	710	Utility(37CFR 1.53(b)) / CPA(37CFR 1.53(d)) Filing Fee	710
106	320	Design Filing Fee	
108	710	Reissue Filing Fee	
114	150	Provisional Filing Fee	

SUBTOTAL (1) 710

2. CLAIMS

☐ Filing Under 37CFR 1.53 (b)

☐ CPA Under 37CFR 1.53 (d)

☐ Amendment

	Extra Claims		Fee from below		Fee Paid
Total	27 - 20=	7	x 18	=	126
Ind.	2 - 3=	0	x 80	=	0
Multiple Dependent Claims				=	0

Large Fee Code	Entity Fee($)	Fee Description
103	18	Claims in excess of 20
102	80	Independent Claims in excess of 3
104	270	Multiple Dependent Claims
109	80	Reissue independent claims over original patent
110	18	Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) 126

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Fee Code	Entity Fee($)	Fee Description	Fee Paid
105	130	Surcharge - late filing fee or oath	
127	50	Surcharge - late provisional filing fee or cover sheet	
139	130	Non-English specification	
147	2520	For filing a request for reexamination	
112*	920	Requesting publication of SIR prior to Examiner action	
113*	1840	Requesting publication of SIR after Examiner action	
115	110	Extension for reply within first month	
116	390	Extension for reply within second month	
117	890	Extension for reply within third month	
118	1390	Extension for reply within fourth month	
128	1890	Extension for reply within fifth month	
119	310	Notice of Appeal	
120	310	Filing a brief in support of an appeal	
121	270	Request for oral hearing	
138	1510	Petition to institute a public use proceeding	
140	110	Petition to revive – unavoidable	
141	1240	Petition to revive – unintentional	
142	1240	Utility issue fee (or reissue)	
143	440	Design issue fee	
122	130	Petitions to the Commissioner	
123	50	Petitions related to provisional applications	
126	240	Submission of Information Disclosure Statement	
581	40	Recording each patent assignment per property (times number of properties)	40
146	710	Filing a submission after final rejection(37 CFR 1.129(a))	
149	710	For each additional invention to be examined (37 CFR 1.129(b))	
Other fee (specify)			
Other fee (specify)			

* Reduced by Basic Filing Fee Paid

SUBTOTAL(3) 40

SUBMITTED BY

Typed or Printed Name	Michele L. Conover	Complete (if applicable) Reg. Number	34962
Signature	Michele L Conover	Date 10/24/00	Deposit Account User ID

SEND TO: Assistant Commissioner for Patents, Washington, D.C. 20231

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	
Filing Date	
First Named Inventor	Eric Cheung et al.
Group Art Unit	
Examiner Name	
Attorney Docket Number	2000-0092

Total Number of Pages in this Submission

jc714 U.S. PTO 09/694880 10/24/00

Enclosures *(check all that apply)*

- ☒ Fee Transmittal Form
  - ☒ Fee Attached
- ☐ Amendment / Response
  - ☐ After Final
  - ☐ Affidavits / Declaration(s)
- ☐ Petition for Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Response to Missing Parts/Incomplete Application
- ☒ Assignment & Recordation Cover Sheet
- ☐ Drawing(s) & Letter to Official Draftsman
- ☐ Licensing-related Papers
- ☐ Petition Routing Slip (PTO/SB/69) and Accompanying Petition
- ☐ Petition to Convert a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ After Allowance Communication to Group
- ☐ Appeal Communications to Board of Appeals and Interferences
- ☐ Appeal Communications to Group *(Appeal Notice, Bnef, Reply Brief)*
- ☐ Proprietary Information
- ☐ Status Letter
- ☒ Return Receipt Postcard
- ☐ Additional enclosure(s) *(please identify below)*

Remarks

CORRESPONDENCE ADDRESS

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NAME	Michele L. Conover	Reg. #	34962
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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on this date: 10/24/2000

Type or Printed Name	Shawn McGee		
Signature		Date	10/24/2000

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METHOD AND SYSTEM FOR PROVIIDING COMMUNICATION CONTROL FUNCTIONALITY AT A REMOTELY LOCATED SITE USING A DISTRIBUTED FEATURE ARCHITECTURE

Technical Field

The present invention relates to a system and method for providing control functionality to communication services, and more particularly, to a method and system for providing communication control functionality at a remotely located site using a distributed feature architecture.

Background of the Invention

In the network architectures currently used for most voice and data communications, such as the Public Switched Telephone Network, intelligence is concentrated at central locations to allow for complicated functions to be implemented on a widespread basis. Network elements which may be utilized to carry out these functions include network databases and Automatic Call Distributors (ACDs). Such functions may include complex routing instructions as may be required in directing calls to call centers with multiple geographic locations and services which use calling cards. In the case of call center services, multiple calls are routed to ACDs at the same time causing the calls to be placed in queues. Typically, ACDs are located on the call center premises and owned and operated by the call center. The expense involved in obtaining and operating the ACDs is significant.

Another phenomenon which is affecting how communication services are being provided is due to the fact that many employees are now able to work out of their homes, commonly referred to as telecommuting. In order for telecommuters to effectively perform their jobs, there is a need for the telecommuter to have access to sophisticated communication services such as company databases and other software, as well as telecommunication features such as conference calling and call forwarding. It is very expensive to provide telecommuters with the equipment required to be able to provide these services.

There is a need to provide telecommuters with the ability to have sophisticated communication control functionality in a cost effective manner.

One solution to this problem is to provide the communication control functionality in the network and make it accessible to the telecommuter. Such a solution is described in commonly assigned, co-pending patent application serial number 09/318015 filed May 25, 1999 entitled "Method and System for Providing Communication Control Functionality at a Remotely Located Site" which is incorporated by reference herein. However, this solution is not contemplated in the context of a distributed feature architecture.

Summary of the Invention

The present invention is directed to a system and method for providing communication control functionality at a remotely located site using a distributed feature architecture. An Enhanced Network User (ENU) connects to a Distributed Feature Network (DFN) in order to gain access to communications features contained in the DFN. Based on the type of communication requested, one or more feature boxes are created in order to implement the requested communication.

An example of the type of ENU who may request communication over the DFN is a customer service representative or agent who works in a remote location from a call center and does not have access to sophisticated communication equipment. The customer service representative connects to the DFN and logs in so that he can have access to call center applications. Once logged in, the customer service representative is able to retrieve information, such as order forms and customer records from an operational database. The customer service representative also is able to use sophisticated communication features such as conference calling, transferring calls and monitoring techniques by accessing the appropriate feature boxes in the DFN.

Another example of the type of ENU who may request communication over the DFN is a telecommuter. The telecommuter connects to the DFN and logs in so that he can have access to telecommuter applications . Once logged

in the telecommuter is able to retrieve files from an operational database. The telecommuter is also able to use sophisticated communication features such as conferencing, share presentation and other application by accessing the appropriate feature boxes in the DFN.

Brief Description of the Drawings

The present invention is illustrated by way of example and not limitation in the accompanying figures in which like reference numerals indicate similar elements and in which:

FIG. 1 illustrates a block diagram of a system for implementing communication control functionality at a remotely located site in accordance with the present invention;

FIG. 2 is a block diagram of the system of FIG.1 which illustrates how an enhanced network user may log onto a communication network to achieve communication control functionality according to an embodiment of the present invention;

FIG. 3 is a block diagram of the system of FIG. 1 which illustrates how the enhanced network user receives an incoming communication from a third party caller in accordance with the present invention;

FIG. 4 is a block diagram of the system of FIG. 1 which illustrates how the enhanced network user may take advantage of communication control functionality resident in the network during the handling of a call with a third party caller in accordance with the present invention; and

FIG. 5 is a block diagram of the system of FIG. 1 which illustrates how the enhanced network user may take advantage of communication control functionality resident in the network in a telecommuting context in accordance with the present invention.

Detailed Description

FIG. 1 illustrates a system for implementing communication control functionality at a remotely located site using a distributed feature architecture in

accordance with the present invention. It is to be understood that the present invention is being described in the context of a user (such as one at location 108, 122 or 150) being able to access network capabilities to be able to perform desired functions at his location without the need for specialized telecommunications equipment or elaborate network connections.

The type of applications which may be employed by the user are of the type which might normally be required in a workplace environment, such as, but not limited to call center software applications or other type of office related applications such as conferencing, access to corporate databases and software and various other applications. In addition, communications between a user of such network capabilities and a third party which does not have access to these capabilities will also be discussed hereafter.

For ease of explanation, a user of the network features contemplated by the present invention will be referred to hereinafter as an enhanced network user (ENU). A third party trying to reach an ENU will be referred to as a third party caller (TPC). The manner in which a TPC or ENU may connect to the network elements is fully described in co-pending application serial number 09/318015 filed May 25, 1999 entitled "Method and System for Providing Communication Control Functionality at a Remotely Located Site" which, as indicated above, is incorporated by reference herein. The types of communication applications which may be used by the ENU are further described in co-pending applications serial number 09/492594 filed January 27, 2000, entitled "Virtual Contact Center With Flexible Staffing Control"; serial number 09/490887 filed January 27, 2000, entitled "Control of Merchant Application by System Monitor in Virtual Contact Center"; and serial number 09/370766 filed August 9, 1999, entitled "Method and System for Providing Enhanced Call Service Features at Remote Locations" each of which is incorporated herein by reference.

An ENU may connect to a distributed feature network 142 in a number of ways. The distributed feature network (DFN) 142 is the mechanism by which the ENU is able to obtain and utilize the enhanced network features the ENU needs to perform his or her desired tasks. The DFN 142 comprises a

number of nodes where feature logic resides and executes. These Distributed Feature Nodes (DF Nodes) can be deployed at various locations in the network, such as DF Node 144 in corporate location 130, DF Node 148 in ENU home 150, and a network resident DF Node 146. Each DF Node is comprised of a DFN router, trunk interfaces, feature boxes, a configuration database and an operational database as will be made more apparent hereinafter.

An ENU at a first location 108 accesses the DFN 142 by using either a telephone 110 and/or a personal computer (PC) 114 to connect via a cable modem 112 to a cable headend 120 which is connected to the Internet 106. It to be understood by those skilled in the art that instead of the Internet 106 the ENU could connect to an Intranet or other type of wide area network. The ENU must log in prior to gaining access to the DFN 142.

In addition to logging in to the DFN 142, an ENU may also be required to authenticate their identity. Authentication may occur through any known means. Identifying characteristics that have been employed in authentication techniques include: voice samples, fingerprints, retina patterns, personal appearance, handwriting and even the manner in which a wave is polarized as it passes through a portion of the body. Another method employed to obtain such an alleged identity is to require the requester to enter some type of a code. This code may be typed in via a keypad or scanned from a device in the requester's possession and may comprise a login identification and password or a pseudo-random code generated by a security device. In addition, smart cards or digital certificates can be used to authenticate the ENU.

For example, the ENU may log into the DFN 142 by entering an appropriate login name and password either by typing or speaking the login name and password into the PC 114 or speaking the login name and password into the telephone 110. A web server 132 and database 140 which contain all of the data needed to run the various applications required by the ENU are accessible to the DFN 142 via a hub 136 which is preferably a router.

A two line solution can be used to connect to the DFN 142. An ENU located at house 122 can use a telephone 104 to connect to the Public Switched

Telephone Network (PSTN) 104. The PSTN 104 can then connect via a gateway 160 to the Internet 106. The ENU's PC 126 can also connect through a Virtual Private Network (VPN) 128 to the Internet 106. As indicated above, in order for the ENU PC 126 to access the DFN 142 it must first log in. Once logged in, the ENU PC 126 can connect to the corporate web server 132 and database 140 via a hub 136.

An ENU may also directly connect to the DFN 142. A telecommuter located at house 150 may connect to a virtual private network (VPN) 156 via a PC 158 which is directly connected both to the Internet 106 and the DFN 142.

The specifics of how the DFN 142 operates in order to provide various multimedia services is described in co-pending patent applications serial numbers 09/034,681 entitled "Telecommunication System and Method" which was filed on March 4, 1998 and provisional application serial number 60/154877, filed September 20, 1999, entitled "Routing Extensions for Telecommunications Network System and Method" both of which are incorporated by reference herein. In accordance with the present invention, the distributed feature network can be used to implement communication control functionality to an enhanced network user by providing the functionality via the network rather than by requiring the enhanced network user to have specialized equipment.

Because of the dynamic nature of the DFN in that feature boxes are created and destroyed based on the network functional requirements of a particular ENU, the present invention will be described in conjunction with a number of network diagrams which illustrate various network functionalities which may be required to practice the present invention. It is to be understood by those skilled in the art that these diagrams are merely a sampling of the type of functionality which may be implemented using the present invention, and not an exhaustive catalog of all network functionalities available to any given ENU.

FIG. 2 illustrates an architecture which may be used to have an ENU log onto a DFN 206. The DFN 206 provides the ENU with the data and software required to obtain sophisticated multimedia features such as, but not limited to, conferencing, call forwarding, downloading of databases, spreadsheets and

forms, etc. Types of uses for the DFN 206 include call center applications for remote call center workers and office-type applications for telecommuters. DFN 206 may be made up of a number of DF Nodes. Each DF Node is responsible for providing the ENU with a particular communication functionality.

The DFN is comprised of a plurality of feature boxes (e.g., authentication feature box 216). The feature boxes communicate with an operational database 214 for the storage and retrieval of data. For example, a feature box may access TPU records to determine if a TPU's information matches information kept on file for that particular TPU. Another example would be the retrieval of data which represents which ENUs (e.g., call agents) are busy and the size of a queue for a particular ENU. Other data which may be accessed from the operational database 214 includes customer profiles, inventories and various forms.

An example of how an ENU may gain access to the DFN 206 will now be described. An ENU communication device 202, such as a PC, connects to a DFN 206 via a cable modem 204 by dialing an access number. A trunk interface 208 located within the DFN 206 receives the access number and forwards the number to a DFN router 210. The DFN router 210 then looks up the access number in a configuration database 212 to determine which feature box or boxes need to be accessed. The configuration database 212 provides data which pertains to call set up and determines which feature boxes are required to accomplish the call set up and in which order the feature boxes need to be accessed.

In an embodiment of the present invention, the translation of the access number may be used to determine login criteria for the ENU. The IP address of the ENU communication device may also be received by the DFN router 210. In the present example, the DFN database determines that an ENU associated with the ENU communication device 202 must log in. The authentication feature box (FB) 216 requires that the ENU associated with the ENU communication device 202 provide login information, such as a login name and password.

Assuming that a valid login name and password are received, the authentication FB 216 would compare the login name and password to a table

containing valid login names and passwords residing in the operational database 214 to log in the ENU associated with the ENU communication device 202. Once logged in, application FB 218 would be created to allow the ENU associated with the ENU communication device 202 to have access to the operational database 214 as well as additional feature boxes in the DFN 206.

The application FB 218 represents the set of feature boxes that would be set up to allow the ENU communication device 202 to have access to software applications maintained by the operational database 214. The types of application feature boxes which may be required by the ENU include feature boxes for creating order forms, viewing customer records, and for checking inventory stock. In an example where the ENU is a contact center agent who is logging into the contact center to begin receiving calls, a login and activate FB 220 is created to update the status of the ENU in the operational database 214 to indicate that the ENU is available to receive incoming calls.

FIG. 3 illustrates a system for receiving an incoming call intended for an ENU in accordance with the present invention. A Third Party Caller (TPC) places a call to an ENU using a telephone 302. It is to be understood by those skilled in the art that the TPC may use another type of communication device such as, but not limited to, a wireless telephone, a computer with telephony software or a personal communication device without departing from the scope and spirit of the present invention. The call is communicated over the Public Switched Telephone Network (PSTN) 304 to an IP gateway 306. In accordance with one embodiment of the present invention, the routing of the call to the IP gateway 306 is the result of the translation of the dialed number inputted into telephone 302 by the caller by a network database (not shown) located within the PSTN 304. The translation would indicate the routing instructions which would include routing to the IP gateway 306. The dialed number may be a toll free number such as an 8## number or any other type of telephone number which would be recognized by the PSTN 304 as requiring translation for routing purposes.

The IP gateway 306 would then route the call to a trunk interface 310 which is located within the DFN 308. The DFN 308 is preferably a packet-based

network such as the Internet or an intranet. The trunk interface 310 would then route the call to a DFN router 312. Included with the call may be the dialed number (DNIS) as well as the number from which the called originated (ANI). Other information to the extent it may affect further routing of the call such as, but not limited to, time of day, day of week, geographic area of origination may also be communicated with the call.

The DFN router 312 would then communicate with the configuration database 314 to determine what features need to be created to handle the incoming call. For each feature that is required, a feature box is created. In the present example being described in conjunction with FIG. 3, it is assumed that the TPC is attempting to reach a call center representative, in the present example ENU PC 328.

The trunk interface 310 would first route the call and the additional information mentioned above to a Telephone Number Translation (TNT) feature box 318. The TNT feature box 318 would then communicate with the operational database 316 via the DFN router 312 to perform a lookup of the configuration database 314 and then determine further routing instructions for the call. In the present example, the telephone number translation indicates that the call is directed to a call center representative. Based on various factors such as, but not limited to, where the call originates (e.g., ANI), the time of day and day of week, an initial determination of specifically where the call should be routed is determined.

Next the configuration database 314 has determined that a Voice Response Unit (VRU) feature box 320 is needed to get further information from the TPC. A connection is established between the VRU feature box 320 and the TPC's telephone 302 to obtain specific information from the TPC. Such information may include the purpose of the call (e.g., to place an order, register a complaint, speak with customer service), or the urgency of the call. The TPC may provide the requested information in any of a number of conventional ways for responding to a VRU including Dual Tone Multifrequency (DTMF) tones or voice response. Based on the information provided by the TPC which is then

forwarded to the operational database 316, the ultimate destination of the call may be altered.

Once the final routing for the call has been determined by the configuration database 314, the call is forwarded to an Automatic Call Distributor (ACD) feature box 322 which will connect the TPC to the designated ENU PC 328, when the ENU PC 328 is available to receive the call. As with any ACD, if there are more callers than call center representatives to answer the calls, queues will be formed for one or more of the call center representatives to manage the call flow. The ACD feature box 322 can also redistribute calls if it determines that calls can be handled in a more expedited fashion. The ACD feature box 322 may also communicate with one or more PBX feature boxes 323. The PBX feature boxes 323 provide features which are similar to a conventional PBX such as, but not limited to, hold, conferencing, and transfer. Once the ENU PC 328 is available to take the call from the TPC, a trunk interface 324 communicates the call to the ENU PC 328 via a cable modem 326.

Another aspect of the present invention is the ability for the ENU to have access to communication control functionality through the communication network. An example of such functionality will be described now with reference to FIG.4. Continuing the example illustrated in FIG. 3, it is determined by the ENU that the call from the TPC needs to be transferred to another call center representative (ENU). The ENU sends a message to the PBX feature box 323 via the ENU PC 328 indicating that the call needs to be transferred to another agent. It is to be understood that the agent in which the call is to be transferred may be specified or the call may generally be rerouted to another location. In the present example, it is being assumed that the call is being routed to a specific agent. As such, included in the message to the PBX feature box 323 is an indication of which agent should receive the call.

The PBX feature box 323 forwards a request to the DFN router 312 to receive the address of the agent to which the call should be routed. The DFN router 312 sends a query to the operational database 316 to retrieve the address. The operational database 316 includes a table of agents and their corresponding

address locations. The appropriate address is retrieved and sent to the PBX feature box 323 via the DFN router 312. The PBX feature box 323 then determines if the agent is available to take the call. If the agent is available, the PBX feature box 323 transmits the call to a router 410 associated with the agent's PC 414. The call is then bridged from the ACD feature box 322 to the transfer agent's PC 414. If the agent is unavailable to take the call, the PBX feature box 323 may place the call on hold until the agent is available to take the call.

If the agent at ENU PC 328 requests a transfer to a particular agent group (e.g. technical support agent transferring the call to sales), then the ACD feature box 322 is responsible to queue the call to the group. As such, the ENU sends a message via the ENU PC 328 indicating that the call needs to be transferred to a particular agent group.

The ACD feature box 322 forwards a request to the DFN router 312 to receive the address of the agent group to which the call should be routed. The DFN router 312 sends a query to the operational database 316 to retrieve the address. The operational database 316 includes a table of agents groups and their corresponding address locations. The appropriate address is retrieved and sent to the ACD feature box 322 via the DFN router 312. The ACD feature box 322 then determines if one of the agents in the particular agent group is available to take the call. If the agent is available, the ACD feature box 322 transmits the call to a router 410 associated with the agent's PC 414. The call is then bridged from the ACD feature box 322 to the transfer agent's PC 414. If the agent is unavailable to take the call, the ACD feature box 322 may transfer the call to the PBX feature boxes 323 which may place the call on hold until the agent is available to take the call or the call may be placed in a queue to be answered by the agent when he or she is available.

Other types of call control functionality are available to the ENU via the network. Such functionality includes conference calling, placing calls on hold, and accessing remote computer databases and software applications. In the case of call center applications, such software applications can be used to place

orders, provide customer service assistance and access inventory databases. For each action which is to be carried out by the ENU, one or more feature boxes are set up within the network 308.

It is also contemplated that the present invention can be used to carry out telecommuting communication functions. An example of such functionality will now be described with respect to FIG. 5. A TPC calling from a telephone 502 is trying to reach a telecommuter working at ENU PC 528. The TPC dials the telephone number for the ENU which is received by the PSTN 504. It is to be understood by those skilled in the art that the TPC may use another type of communication device such as, but not limited to, a wireless telephone, a computer with telephony software or a personal communication device without departing from the scope and spirit of the present invention. The call is communicated over the Public Switched Telephone Network (PSTN) 504 to an IP gateway 506. The IP gateway 506 then routes the call to a trunk interface 510 which is located within the DFN 508.

The trunk interface 510 would then route the call to a DFN router 512. Included with the call may be the number from which the called originated (ANI). The DFN router 512 would then communicate with the configuration database 514 to determine what features need to be created to handle the incoming call. For each feature that is required, a feature box is created.

Next the configuration database 514 has determined that a Voice Response Unit (VRU) feature box 518 is needed to get further information from the TPC. A connection is established between the VRU feature box 518 and the TPC's telephone 502 to obtain specific information from the TPC. Such information may include the purpose of the call, or the urgency of the call. The TPC may provide the requested information in any of a number of conventional ways for responding to a VRU including Dual Tone Multifrequency (DTMF) tones or voice response.

The ENU, through some customization interface, is provided with customized information on how an incoming call of a particular purpose or urgency should be handled, (e.g., customer service versus customer order

information). This customized information is stored in the operational database 516. Therefore. based on the information provided by the TPC and the information retrieved from the operational database 516, the VRU FB 518 can determine the ultimate destination of the call.

In this example, the call is to be presented to the ENU at ENU PC 528. The DFN router 512, based on information in the configuration database 514, has determined that a voice mail FB 520 and additional PBX FBs 522 are required. Finally, the call is connected to the Trunk Interface 524 which communicates the call to the ENU PC 528 via a cable modem 526. If the ENU is busy or not available to take the call, then the voice mail FB 520 will be activated to take a message from the TPU.

While the present invention has been described in connection with the illustrated embodiments, it will be appreciated and understood that modifications may be made without departing from the true spirit and scope of the invention. For example, while the present invention is described with reference to call center applications, it can be appreciated that the present invention may be used in any situation in which a user is working remotely from a centralized workplace. Examples of such users are telecommuters and remote schooling programs. It is to be understood that the particular embodiments shown and described by way of illustration are in no way intended to be considered limiting. Therefore, references to details of particular embodiments are not intended to limit the scope of the claims, which in themselves recite only those features regarded as essential to the invention.

We claim:

1. A method for providing communication control functionality to at least one communication device associated with an enhanced network user over a distributed feature communication network, the distributed feature communication network comprising a plurality of feature boxes, each feature box enabling a particular communication functionality, the distributed feature communication network also comprising an operational database, said operational database including data records accessible to the enhanced network user for performing work related tasks, the method comprising:

creating an authentication feature box for receiving login information from the at least one communication device associated with the enhanced network user, said authentication feature box determining if the at least one communication device will have access to communication control functions residing in the distributed feature communication network; and

upon login, creating one or more application feature boxes, each application feature box being capable of performing a particular communication control functionality for the at least one communication device, said one or more application feature boxes also being able to download data records from the operational database and communicating the data records to the at least one communication device.

2. The method according to claim 1 wherein access to the communication control functions further comprises the step of the enhanced network user being connected through signaling and media channels to other feature boxes, and records in the operational database necessary for the other feature boxes to function.

3. The method according to claim 1 wherein communication control functionality includes processing of voice and data communications.

4. The method of claim 1 wherein the communication control functionality includes processing of multimedia communications.

5. The method of claim 4 wherein each communication control functionality corresponds to the creation of one or more feature boxes in the distributed feature communication network, said feature boxes invoking specific communication features based on requests received from the at least one communication device.

6. The method of claim 5 wherein the communication control functionality includes conferencing capabilities.

7. The method of claim 5 wherein the communication control functionality includes transferring capabilities.

8. The method of claim 1 wherein said communication device is a computer.

9. The method of claim 1 further comprising the steps of:

receiving an incoming call intended for the at least one communication device associated with the enhanced network user; and

creating one or more feature boxes for connecting the incoming call to the at least one communication device associated with the enhanced network user.

10. The method of claim 9 further comprising the steps of:

receiving a communication from the at least one communication device requesting that the incoming call be placed on hold;

creating a feature box for placing the call on hold; and

transferring the incoming call to the on hold feature box.

11. The method of claim 9 further comprising the steps of:

receiving a communication from the at least one communication device requesting that the incoming call be transferred to voice mail;

creating a feature box for receiving voice mail messages; and

transferring the incoming call to the voice mail feature box.

12. The method of claim 9 further comprising the steps of:

receiving a communication from the at least one communication device requesting that the incoming call be transferred to another communication device not associated with the enhanced network user;

creating at least one feature box for transferring the incoming call;

transferring the incoming call to the communication device not associated with the enhanced network user.

13. The method of claim 9 further comprising the step of:

forwarding one or more data records from the operational database to the at least one communication device associated with the enhanced network user, said one or more data records containing information pertaining to the incoming call.

14. The method of claim 13 further comprising the step of:

forwarding a data record from the database to the at least one communication device associated with the enhanced network user, said data record containing customer record information relating to the customer associated with the incoming call.

15. The method of claim 13 further comprising the step of:

forwarding a data record from the database to the at least one communication device associated with the enhanced network user, said data record containing order forms to be completed by the enhanced network user.

16. The method of claim 1 wherein said distributed feature communication network is a broadband network.

17. The method of claim 16 wherein said distributed feature communication network is a cable network.

18. A method for processing communications to communication devices logged onto a distributed feature network, the distributed feature network comprising a plurality of feature boxes, each feature box enabling a particular communication functionality, the distributed feature network also comprising an operational database, said operational database including data records accessible to the communication devices for performing work related tasks, said communication devices being able to receive voice and data communications, each said communication device being associated with a particular agent, each agent logging in prior to having access to the distributed feature network, said distributed feature network maintaining a list of logged in agents and associated communication devices, said communications originating from one or more third party devices, each third party device being identified by origination information, the method comprising:

receiving a communication request to connect to a communication device logged onto the distributed feature network;

determining the type of communication requested by the third party device;

determining the availability of those communication devices able to respond to the type of communication being requested by the third party device;

routing the communication to an available communication device able to respond to the type of communication being requested;

forwarding to the available communication device information from the operational database relating to the third party associated with the third party device that originated the communication; and

creating feature boxes corresponding to the communication control functionality required by the available communication device so the available communication device is able to interact with the third party device.

19. The method according to claim 18 wherein said communication request is a telephone number.

20. The method according to claim 19 wherein said communication request is a URL address.

21. The method according to claim 18 wherein said step of determining the availability of a communication device further comprises the steps of:

determining which communication devices are associated with agents that are logged onto the distributed feature network;

determining which of the communication devices associated with logged in agents are available to receive communications; and

forwarding the communication to an available communication device associated with a logged in agent.

22. The method of claim 21 further comprising the steps of:

receiving a communication from the available communication device associated with a logged in agent requesting that the third party communication be placed on hold;

creating a feature box for placing the call on hold; and

transferring the third party communication to the on hold feature box.

23. The method of claim 21 further comprising the steps of:

receiving a communication from the available communication device associated with a logged in agent requesting that the third party communication be transferred to voice mail;

creating a feature box for receiving voice mail messages; and

transferring the third party communication to the voice mail feature box.

24. The method of claim 21 further comprising the steps of:

receiving a communication from the available communication device associated with a logged in agent requesting that the third party communication be transferred to a different communication device associated with a different logged in agent;

creating at least one feature box for transferring the third party communication;

transferring the third party communication to the different communication device associated with the different logged in agent.

25. The method of claim 21 further comprising the step of:

forwarding one or more data records from the operational database to the available communication device associated with a logged in agent, said one or more data records containing information pertaining to the third party communication.

26. The method of claim 25 further comprising the step of:

forwarding a data record from the database to the available communication device associated with a logged in agent, said data record containing customer record information relating to the customer associated with the third party communication.

27. The method of claim 25 further comprising the step of:

forwarding a data record from the database to the available communication device associated with a logged in agent, said data record containing order forms.

ABSTRACT

A method for providing communication control functionality at a remotely located site using a distributed feature architecture which provides communication features and data records to an Enhanced Network User (ENU). The ENU connects to a Distributed Feature Network (DFN) in order to gain access to communications features contained in the DFN. Based on the type of communication requested, one or more feature boxes are created in order to implement the requested communication.

Docket No. 50277-2000

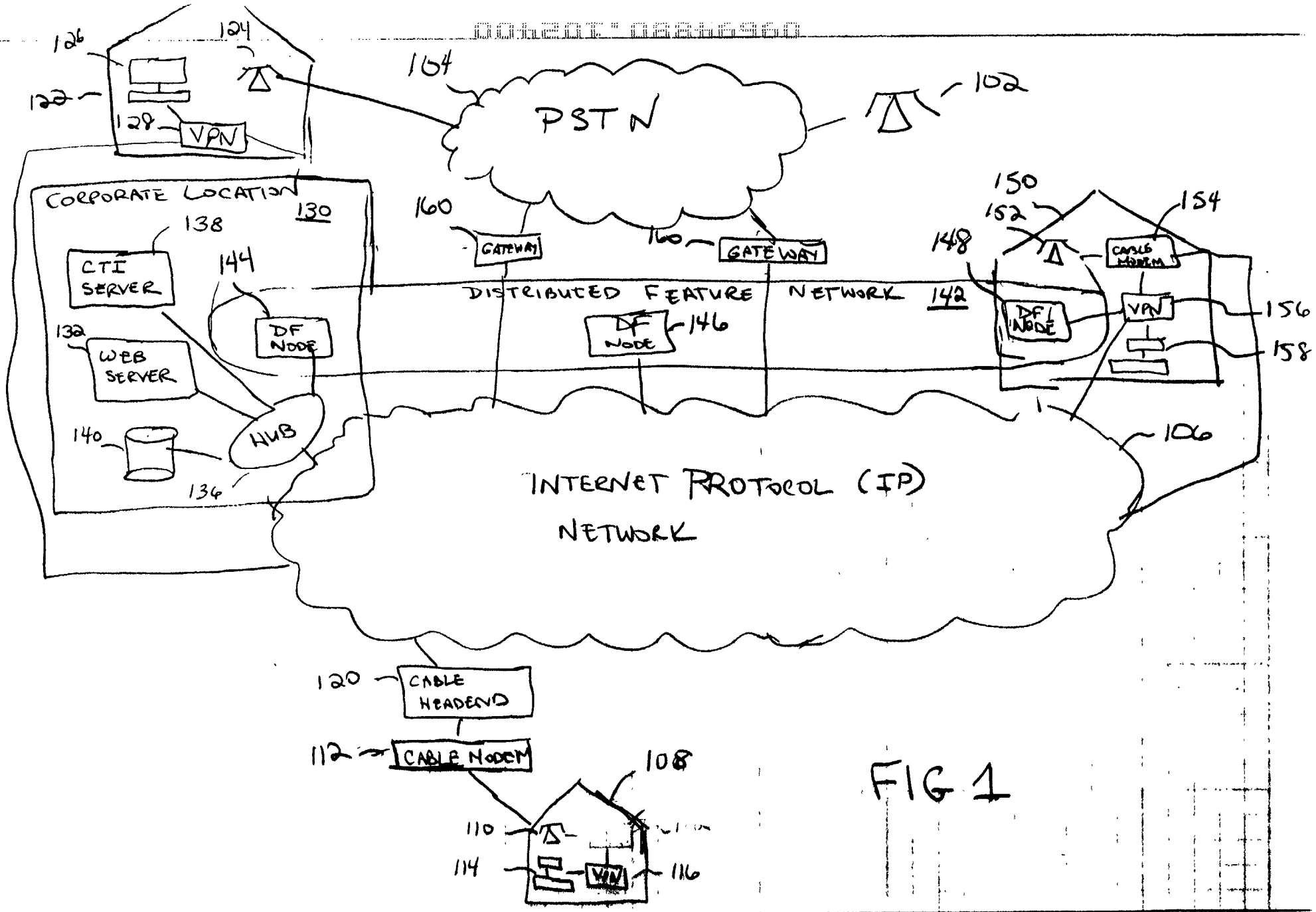

FIG 1

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22-144 200 SHEETS

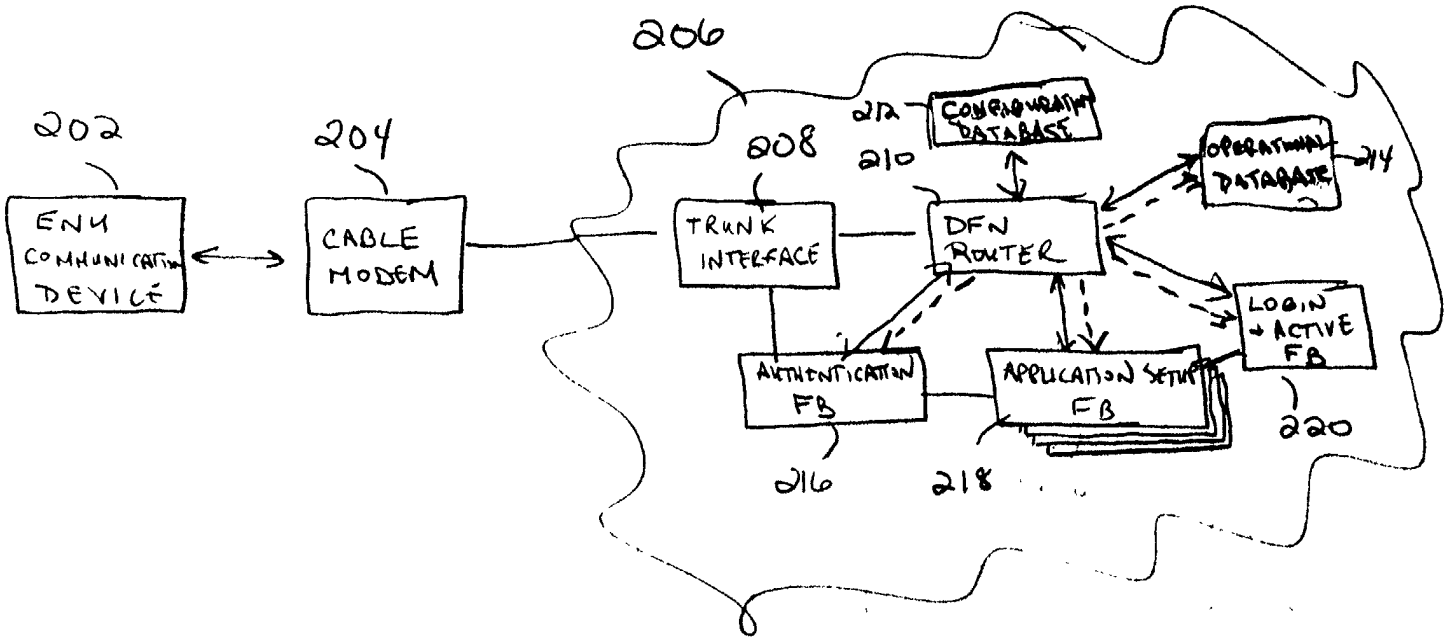

FIG 2

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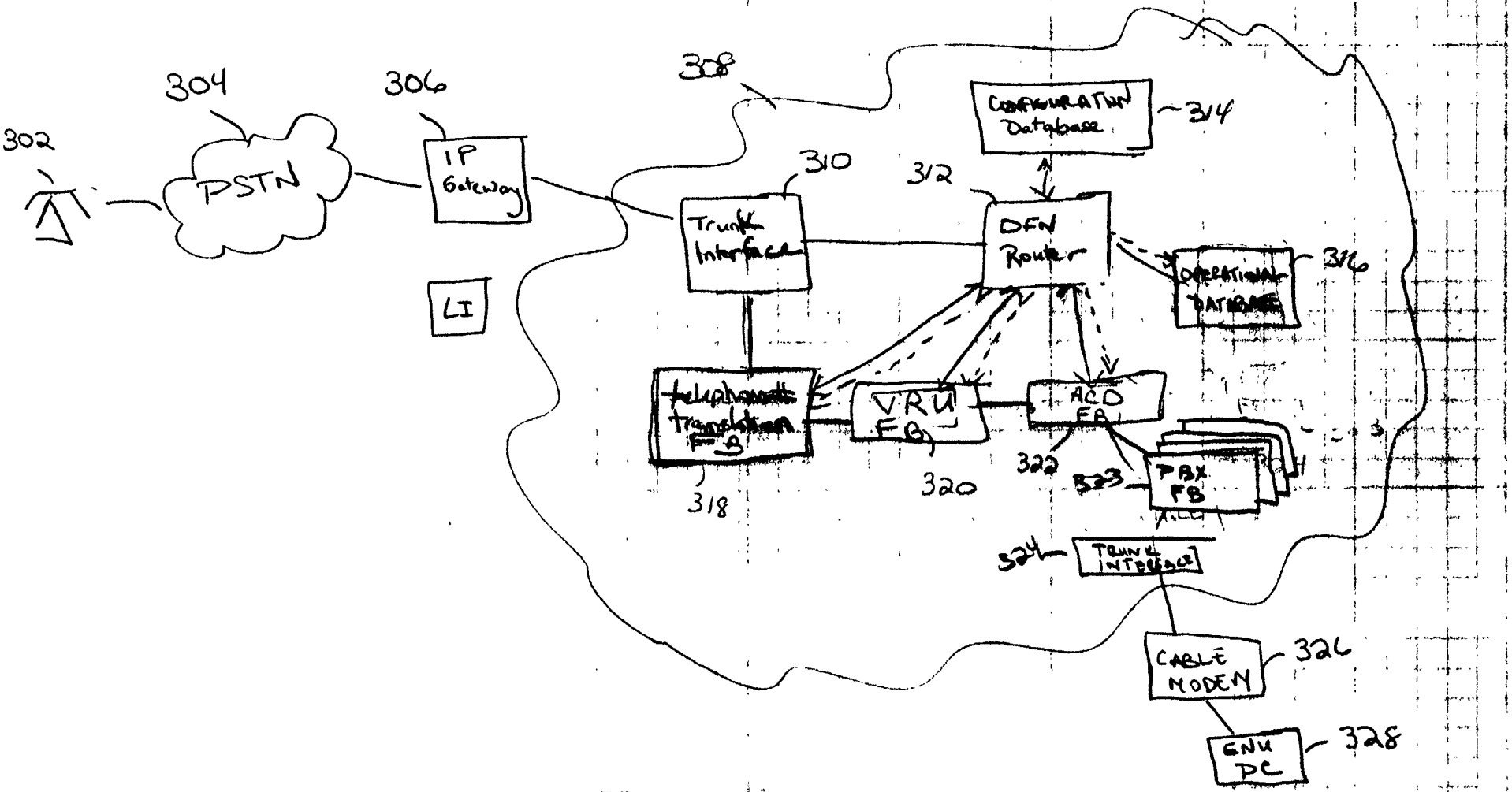

FIG 3

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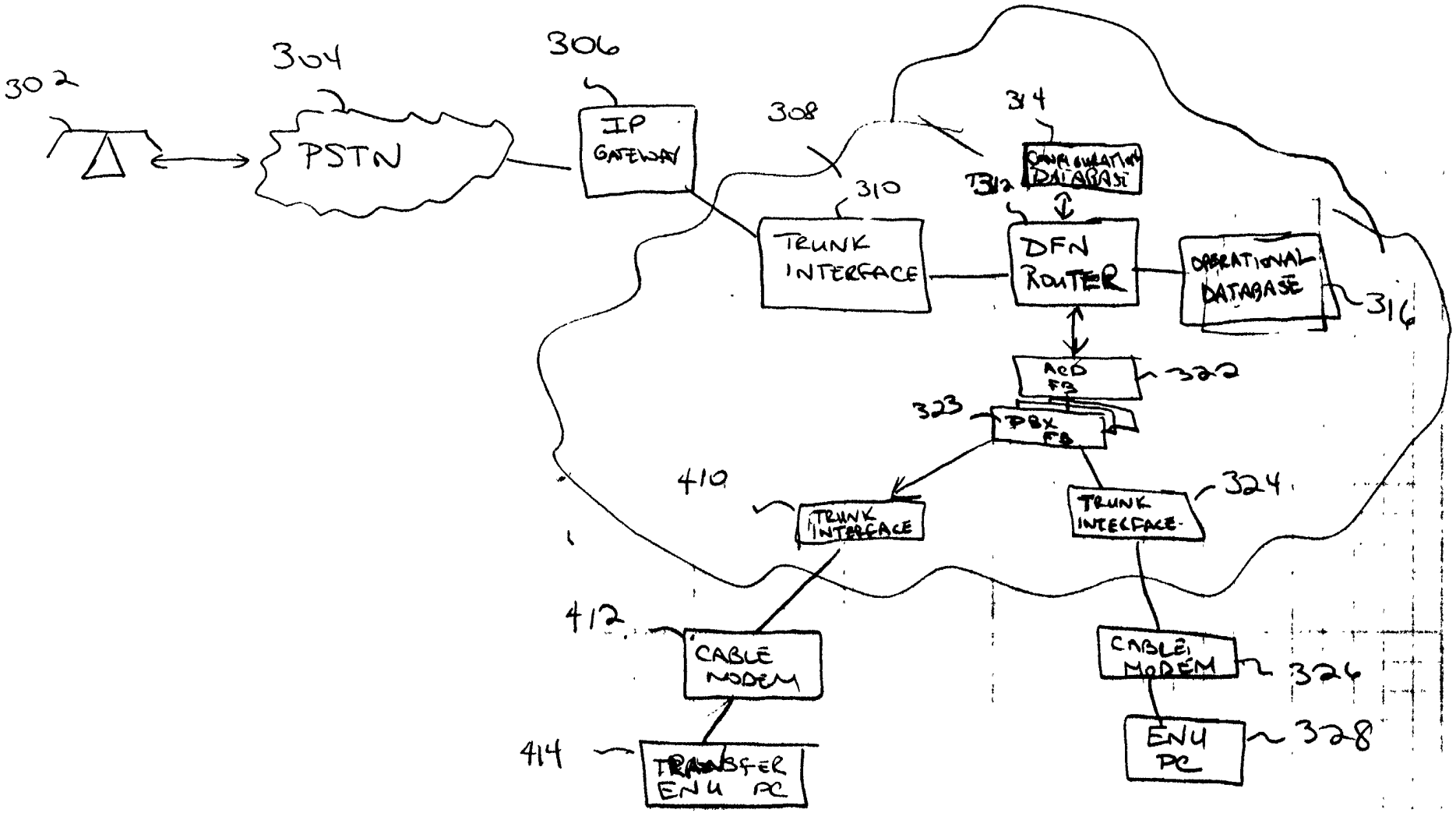
302
304
PSTN
306
IP GATEWAY
308
310
TRUNK INTERFACE
312
314
DFN ROUTER
OPERATIONAL DATABASE
316
322
323
410
TRUNK INTERFACE
324
TRUNK INTERFACE
412
CABLE MODEM
326
414
ENU PC
328

FIG 4.

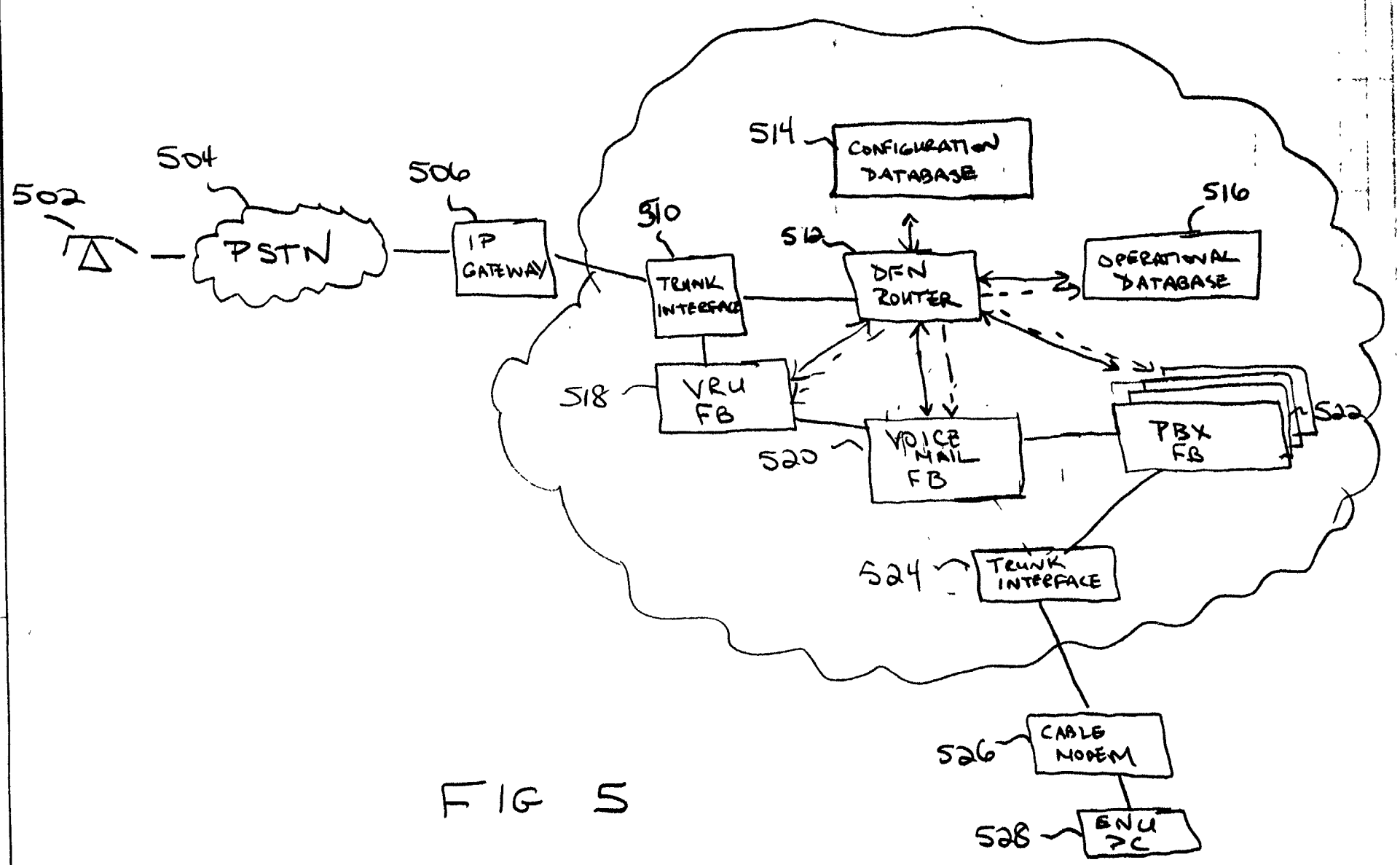

FIG 5

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22-144 200 SHEETS

DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION

☒ Declaration Submitted with Initial Filing **OR** ☐ Declaration submitted after Initial Filing

Attorney Docket Number	2000-0092
First Named Inventor	Eric Cheung
COMPLETE IF KNOWN	
Application Number	
Filing Date	
Group Art Unit	
Examiner Name	

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.
I believe I am the original, first and sole inventor(if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Method And System For Providing Communication Control Functionality At A Remotely Located Site Using A Distributed Feature Architecture

(Title of Invention)

the specification of which

☒ is attached hereto

☐ OR

☐ was filed on as United States Application Number or PCT International

☐ Application Number and was amended on (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 Code of Federal Regulations,§ 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code § 119 (a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of an application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? YES	NO
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) below.

Application Number(s)	Filing Date(MM/DD/YYYY)	
		☐ Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto

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Attorney Docket Number: 2000-0092

DECLARATION - Utility or Design Patent Application

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

U.S. Parent Application or PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number *(if applicable)*

☐ Additional U.S. or PCT International application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

As a named inventor, I hereby appoint the following registered practitioner(s) with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith:

☐ Customer Number

Place Customer Number Bar Code Label here

OR

☒ Registered practitioner(s) name/registration number listed below

Name	Registration Number	Name	Registration Number
CONOVER, Michele L.	34962	DELACRUZ, Cedric G	36498
DWORETSKY, Samuel H.	27873	GARG, Rohini K	45272
ISAACSON, Thomas M.	44166	LEE, Benjamin S.	42787
LEVY, Robert B.	28234	MCGAHAN, Susan E.	35948
MONKA, Gary H.	35290	NAVON, Jeffrey M	32711

☒ I also appoint the following additional registered practitioner(s) named on the Registered Practitioner Information (Supplemental Sheet) (PTO/SB/02C modified by AT&T Corp.) attached hereto with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith.

Direct all Correspondence to:

☐ *Customer Number or Bar Code Label* (Insert Customer No. or Attach bar code label here) *or* ☒ *Correspondence address below*

NAME	Samuel H. Dworetsky				
ADDRESS	AT&T CORP. P.O. Box 4110				
CITY	Middletown	STATE	New Jersey	ZIP CODE	07748-4110
COUNTRY	United States of America			FAX	732-368-6932

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor ☐ A petition has been filed for this unsigned inventor

Name	Eric Cheung		
Signature	Eric Cheung	Date	OCT 20. 2000
Citizenship	Canada		
Address (line 1)	60 E. 8th St., Apt 8F		
Address (line 2)	New York		
Address (line 3)	New York County		
Address (line 4)	New York		
Address (line 5)	USA		
Zip Code	10003		

☒ *Additional Inventors are being named on the* 1 *seperately numbered sheets attached hereto*

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Attorney Docket Number: 2000-0092

DECLARATION

ADDITIONAL INVENTOR(S)
Supplemental Sheet
Page of

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor		
Name	Mark Jeffrey Foladare		
Signature	Mark Jeffrey Foladare	Date	10/11/00
Citizenship	United States		
Address (line 1)	15 Rebel Run Drive		
Address (line 2)	East Brunswick		
Address (line 3)	Middlesex County		
Address (line 4)	New Jersey		
Address (line 5)	USA		
Zip Code	08816		

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor		
Name	Shelley B. Goldman		
Signature	Shelley B. Goldman	Date	10/11/00
Citizenship	United States		
Address (line 1)	9 Surrey Lane		
Address (line 2)	East Brunswick		
Address (line 3)	Middlesex County		
Address (line 4)	New Jersey		
Address (line 5)	USA		
Zip Code	08816		

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor		
Name	James Christopher Ramming		
Signature		Date	
Citizenship	United States		
Address (line 1)	328 Cowper Street		
Address (line 2)	Palo Alto		
Address (line 3)	Santa Clara County		
Address (line 4)	California		
Address (line 5)	USA		
Zip Code	94301		

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor		
Name			
Signature		Date	
Citizenship			
Address (line 1)			
Address (line 2)			
Address (line 3)			
Address (line 4)			
Address (line 5)			
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ADDITIONAL INVENTOR(S)
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Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor
Name	Mark Jeffrey Foladare
Signature	**Date**
Citizenship	United States
Address (line 1)	15 Rebel Run Drive
Address (line 2)	East Brunswick
Address (line 3)	Middlesex County
Address (line 4)	New Jersey
Address (line 5)	USA
Zip Code	08816

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor
Name	Shelley B. Goldman
Signature	**Date**
Citizenship	United States
Address (line 1)	9 Surrey Lane
Address (line 2)	East Brunswick
Address (line 3)	Middlesex County
Address (line 4)	New Jersey
Address (line 5)	USA
Zip Code	08816

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor
Name	James Christopher Ramming
Signature	**Date** 10/19/2000
Citizenship	United States
Address (line 1)	328 Cowper Street
Address (line 2)	Palo Alto
Address (line 3)	Santa Clara County
Address (line 4)	California
Address (line 5)	USA
Zip Code	94301

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor
Name	
Signature	**Date**
Citizenship	
Address (line 1)	
Address (line 2)	
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Attorney Docket Number: 2000-0092

DECLARATION -- Supplemental Priority Data Sheet

Additional Foreign Applications:

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? YES	NO
			☐	☐	☐
			☐	☐	☐
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Additional Provisional applications:

Application Number(s)	Filing Date(MM/DD/YYYY)

Additional U.S. applications:

U.S. Parent Application or PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number *(if applicable)*

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Attorney Docket Number: 2000-0092

DECLARATION		Registered Practitioner Information (Supplemental Sheet)	
Name	Registration Number	Name	Registration Number
RESTAINO, Thomas A.	33444	STEINMETZ, Alfred G.	22971

Express Mail Label No. EL 660 760 905 US

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